

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Original) A coating device for selectively applying a coating to surfaces of an object, the device applying the coating based upon optical properties of the surfaces such that the coating is applied to surfaces of a first type and is not applied to surfaces of a second type, the first type of surface being optically distinguishable from the second type of surface, the coating device comprising:

(a) at least one object-holding element configured to hold the object while a coating is applied;

(b) at least one optical scanning device deployed so as to scan at least a portion of the object, said optical scanning device configured so as to produce output indicative of the types of surfaces of the object;

(c) at least one coating applicator deployed so as to deposit a fluid so as to coat at least a portion of the object;

(d) at least one fluid delivery system in fluid communication so as to supply said fluid to said coating applicator;

(e) a processing unit being responsive at least to said output so as to selectively activate said coating applicator, thereby applying said coating substantially only to surfaces of the first type; and

(f) a drive system configured so as to provide relative motion between the surface of the object and said coating applicator, and between the surface of the object and said optical scanning device.

2. (Original) The coating device of claim 1, wherein said drive system is configured so as to rotate said object-holding element about an axis perpendicular to a direction of application of said coating applicator.

3. (Original) The coating device of claim 1, wherein said at least one object-holding element is implemented as two object-holding elements configured so as to simultaneously support the object at two different regions along a length of the object.
4. (Original) The coating device of claim 3, wherein said two object-holding elements are mechanically linked so as to rotate synchronously about a single axis, said axis being perpendicular to a direction of application of said coating applicator.
5. (Original) The coating device of claim 1, wherein said at least one coating applicator includes a pressure-pulse actuated drop-ejection system with at least one nozzle.
6. (Original) The coating device of claim 1, wherein a spatial relationship between said coating applicator and said object is variable.
7. (Original) The coating device of claim 6, wherein said spatial relationship is varied along a first axis that is parallel to a direction of application of said coating applicator, and a second axis that is perpendicular to said direction of application of said coating applicator.
8. (Original) The coating device of claim 7, wherein said coating applicator is displaceable relative to said object-holding element, said displacement being along said first axis and said second axis, thereby varying said spatial relationship.
9. (Original) The coating device of claim 8, wherein both said coating applicator and said optical scanning device are deployed on a displaceable applicator base, displaceable relative to said object-holding element, said displacement being along said first axis and said second axis, thereby varying said spatial relationship.
10. (Original) The coating device of claim 1, wherein said at least one coating applicator is implemented as a plurality of coating applicators and said at least one fluid delivery system is implemented as an equal number of fluid delivery systems, each fluid delivery system

supplying a different fluid coating material to said coating applicator with which said each fluid delivery system is in fluid communication.

11. (Original) The coating device of claim 1, wherein the object is a catheter that includes a balloon portion on which a stent is deployed, such that said stent is a surface of the first type and said balloon is a surface of the second type surface.

12. (Original) The coating device of claim 1, wherein said processing unit is responsive to an indication of said relative motion so as to change operational parameters of the coating device as required.

13. (Original) The coating device of claim 1, wherein said object-holding element, said coating applicator, said optical scanning device, said drive system and at least a portion of said fluid delivery system are deployed within a housing that includes an application compartment.

14. (Original) The coating device of claim 13, wherein said housing includes a base housing section and a detachable housing section.

15. (Original) The coating device of claim 14, wherein said application compartment is defined by portions of both said base housing section and said detachable housing section.

16. (Original) The coating device of claim 15, wherein said base housing section includes said coating applicator, at least a portion of said fluid delivery system, said optical scanning device and said processing unit and at least a first portion of said drive system, and said detachable housing section includes said object-holding element and at least a second portion of said drive system.

17. (Original) The coating device of claim 16, wherein said base housing section includes at least one fluid delivery system.

18. (Original) The coating device of claim 17, wherein said detachable housing section is disposable.

19. (Original) The coating device of claim 13, wherein said application compartment is a substantially sterile environment.

20. (Original) The coating device of claim 13, wherein said coating applicator, and said fluid delivery system are included in a removable sub-housing, said removable sub-housing being deployed within said application compartment and said removable housing being detachably connected to said processing unit.

21. (Original) A coating device for selectively applying a coating to surfaces of an object, the device applying the coating based upon optical properties of the surfaces such that the coating is applied to surfaces of a first type and is not applied to surfaces of a second type, the first type of surface being optically distinguishable from the second type of surface, the coating device comprising:

- (a) a housing which includes an application compartment;
- (b) at least one object-holding element deployed within said application compartment, said object-holding element configured to hold the object to which a coating is applied;
- (c) a displaceable applicator base deployed within said application compartment, said applicator base including:
 - (i) at least one coating applicator aligned so as to deposit a fluid whereby at least a portion of the object is coated; and
 - (ii) at least one optical scanning device deployed so as to scan at least a portion of the object, said optical scanning device configured so as to produce output indicative of the different types of surfaces of the object, said displacement of said applicator base resulting in a variance of a spatial relationship between said coating applicator base and the object;
- (d) at least one fluid delivery system in fluid communication so as to supply said fluid to said coating applicator;

(e) a processing unit being responsive at least to said output so as to selectively activate said coating applicator, thereby applying said coating substantially only to surfaces of the first type; and

(f) a drive system configured so as to provide relative motion between the surface of the object and said applicator base.

22. (Original) The coating device of claim 21, wherein said housing includes a base housing section and a detachable housing section.

23. (Original) The coating device of claim 22, wherein said application compartment is defined by portions of both said base housing and said detachable housing section.

24. (Original) The coating device of claim 23, wherein said base housing section includes said displaceable applicator base, at least a portion of said fluid delivery system, and said processing unit, and at least a first portion of said drive system, and said detachable housing section includes said object-holding element and at least a second portion of said drive system.

25. (Original) The coating device of claim 24, wherein said base housing section includes at least one fluid delivery system.

26. (Original) The coating device of claim 25, wherein said detachable housing section is disposable.

27. (Original) The coating device of claim 21, wherein said drive system is configured so as to rotate said object-holding element about an axis perpendicular to a direction of application of said coating applicator.

28. (Original) The coating device of claim 21, wherein said at least one object-holding element is implemented as two object-holding elements configured so as to simultaneously support the object at two different regions along a length of the object.

29. (Original) The coating device of claim 28, wherein said two object-holding elements are mechanically linked so as to rotate synchronously about a single axis, said axis being perpendicular to a direction of application of said coating applicator.

30. (Original) The coating device of claim 21, wherein said at least one coating applicator includes a pressure-pulse actuated drop-ejection system with at least one nozzle.

31. (Original) The coating device of claim 21, wherein said at least one fluid delivery system is deployed in said base housing.

32. (Original) The coating device of claim 21, wherein said at least one coating applicator is implemented as a plurality of coating applicators and said at least one fluid delivery system is implemented as a like number of fluid delivery systems, each fluid delivery system supplying a different fluid coating material to said coating applicator with which said each fluid delivery system is in fluid communication.

33. (Original) The coating device of claim 21, wherein said coating applicator, and said fluid delivery system are included in a removable sub-housing, said removable sub-housing being detachably connected to said displaceable applicator base.

34. (Original) The coating device of claim 21, wherein said spatial relationship is varied along two axes, a first axis that is parallel to a direction of application of said coating applicator, and a second axis that is perpendicular to said direction of application of said coating applicator.

35. (Original) The coating device of claim 21, wherein the object is a catheter that includes a balloon portion on which a stent is deployed, such that said stent is a surface of the first type and said balloon is a surface of the second type.

36. (Original) The coating device of claim 21, wherein said processing unit is responsive to an indication of said relative motion so as to change operational parameters of the coating device as required.

37. (New) A system for applying material to an object, the system comprising:
at least one material applicator;
at least one scanning device to optically scan the object, the at least one scanning device configured to produce scanning output indicative of a surface type of the object toward which the at least one material applicator is directed; and
a processing unit coupled to the at least one material applicator and the at least one scanning device to receive the scanning output,
wherein the processing unit is configured to activate the at least one material applicator when the received scanning output indicates that the at least one material applicator is aligned with substantially only a first surface type.

38. (New) The system as recited in claim 37, wherein:
the processing unit is configured to de-activate the material applicator when the received scanning output indicates that the at least one material applicator is not aligned with substantially only the first surface type.

39. (New) The system as recited in claim 38, wherein:
the first surface type is optically distinguishable from any another surface type of the object.

40. (New) The system as recited in claim 37, wherein:
the object is a catheter comprising a balloon portion on which a stent is deployed,
wherein the stent comprises the first surface type.

41. (New) The system as recited in claim 40, wherein no surface of the balloon portion is of the first surface type.

42. (New) A system for applying material to an object, the system comprising:
at least one scanning device to optically scan the object, the at least one scanning device configured to produce scanning output indicative of a surface type of the object toward which at least one material applicator is directed; and
a processing unit coupled to the at least one scanning device to receive the scanning output and configured to activate the at least one material applicator when the at least one material applicator is aligned with substantially only a surface type to which the material is to be applied.
43. (New) The system as recited in claim 42, wherein:
the processing unit is further configured to de-activate the at least one material applicator when it is determined that the at least one material applicator is not aligned with substantially only the surface type to which the material is to be applied.
44. (New) The system as recited in claim 42, wherein:
the object is a catheter comprising a balloon portion on which a stent is deployed, wherein the stent comprises the surface type to which the material is to be applied.
45. (New) A system for applying material to an object, the system comprising:
a plurality of material applicators;
at least one scanning device to optically scan the object, the scanning device configured to produce scanning output indicative of a surface type of the object toward which each material applicator of the plurality of material applicators is directed; and
a processing unit coupled to the plurality of material applicators and the at least one scanning device to receive the scanning output,
wherein the processing unit is configured to activate each material applicator for which respective scanning output indicates it is aligned with substantially only a surface of the object to which the material is to be applied.
46. (New) The system as recited in claim 45, wherein:

the processing unit is configured to de-activate each material applicator for which respective scanning output indicates it is not aligned with substantially only a surface of the object to which the material is to be applied.

47. (New) The system as recited in claim 45, wherein:

the object is a catheter comprising a balloon portion on which a stent is deployed, wherein the stent comprises the surface to which the material is to be applied.

48. (New) The system as recited in claim 47, wherein no surface of the balloon portion is of the surface type to which the material is to be applied.